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CAPITAL UTILISATION  
IN KENYA  
MANUFACTURING INDUSTRY

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ABSTRACT

This paper is a summary of the main conclusions of the author's Ph.D. thesis which has the same title. Based on a fourteen-month study of Kenyan manufacturing, the basic question of the thesis is: why should rational entrepreneurs purchase capital which they plan to use for less than the maximum number of hours per week?

Two behavioural models are examined: the shift differential model, in which it is assumed that there are extra costs associated with operating outside normal daytime working hours to be weighed off against the savings in capital cost gained by using capital more hours; and the minimum size of plant model, which assumes that one cannot buy less than a certain amount of capital, and because of limits on the demand for output, the firm's chosen output is less than the output of the capital when used the maximum number of hours.

The major conclusion is that in Kenya utilisation rates and therefore the ratios of output and labour to capital stock are sensitive to the factor-price ratio even in the case where coefficients are fixed *ex ante* and *ex post*. In the case of the minimum size of plant model, the most important reason for market limitation is trade policy which favours import substitutes and discourages exports.

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### INTRODUCTION

In most developing countries investment opportunities are plentiful and unemployment is high, but investment funds are scarce. Furthermore, many investment goods must come from abroad, but it is often difficult for these countries to export enough at existing exchange rates to earn the foreign exchange necessary to buy all the foreign goods they want.

Common sense suggests that in such a situation a country would want to get the most out of the capital goods it does buy. Since labour is relatively abundant and cheap compared to advanced countries, one would expect entrepreneurs to choose labour-intensive production methods to economise on capital. In practice, it may not be easy to do this; there may be a limited number of reliable techniques available. But whatever techniques are chosen, one would expect capital to be used as intensively as possible.

Despite this presumption, development economists have become concerned at growing evidence of serious excess capacity in capital-scarce countries. The concept of 'full capacity output' is a slippery one, but whatever the complications involved in defining 'efficient utilisation of capital', one aspect of it seems relatively uncontroversial: One would expect firms to do whatever they are doing with their capital for as many hours a year as possible.

Nevertheless, it has been argued that in less-developed countries capital is used for many fewer hours a year than it could be used. The policy significance is clear. If policies can be devised to raise utilisation rates, it may be possible to get more employment and output from the same capital expenditure.

### Planned and Actual Utilisation Rates

The maximum number of hours per year that a given kind of capital could be used is determined by engineering constraints, e.g., required maintenance time. Define the planned utilisation rate to be the ratio of the number of hours the entrepreneur intends to operate the plant to the maximum possible; it refers to the rate he has in mind when he builds the plant.

On the one hand, it is desirable to save on capital costs by planning to use the capital as many hours a day as possible. On the other hand, there may be additional costs of running multi-shift operations. Fluctuations in the demand for output or the supply of inputs may be expected; part of these fluctuations may be met by some capacity which will be used only in periods of peak demand or supply, particularly if the good is perishable. If demand is growing over time,

economies of scale and/or adjustment costs may make it rational to 'build ahead of demand'. After considering such factors, the manager will set a planned rate (or planned rates, as a function of time) which may well be less than the maximum--but a priori, one would expect it to be relatively high in a developing country because of the scarcity of capital.

Plans do not always work out, especially in a developing country. Demand may turn out to be less than it was expected to be. There may be an unanticipated shortage of raw materials, skilled labour or transport facilities. Costs may change unexpectedly. These may be largely the entrepreneur's 'fault'-- he made unrealistic predictions-- or they may be the result of quite unforeseeable events such as very unusual weather conditions. Actual utilisation rates may be higher or lower than planned.

It is quite important to disentangle the two aspects. Suppose, for example, that low actual rates are found in a particular industry and when asked why they do not operate longer hours, the managers answer 'because we could not sell the output'. It is necessary to distinguish between the case where their demand forecasts have proved to be wrong and they are operating fewer hours than they planned, and the case where their demand forecasts are correct and they always planned to operate at this rate. In the second case, the manager's answer that he 'cannot sell the output' is the wrong one. He has not explained why if he knew how much he could sell he did not build a smaller plant and produce that output running several shifts. The policy implications are obviously different depending on whether low actual rates represent low planned rates that are being met, or high planned rates that are not being met. For example, in the first case above, if Government stimulates demand, utilisation rates will go up. In the second case, the industry is likely to build more capacity.

This research project was primarily concerned with the determination of planned utilisation rates in manufacturing: What are they? Why are they what they are? Can they be raised and if so, what policy instruments should be used to raise them? We also investigated these questions with respect to differences between planned and actual utilisation rates.

The main sources of information were interviews with representatives of 121 manufacturing firms in Kenya and quantitative data from a study of Capital/Labour, Capital/Output and Labour/Output ratios in the manufacturing sector of the Kenyan economy by Frank Thompson of the Department of Economics, University of Leeds, England. This information was supplemented by information from the 1971 Capacity Survey of Manufacturing Industry at the three digit industry level conducted by the

Kenya Bureau of Statistics, the Phelps-Wasow Study of Effective Rates of Protection and Bureau of Statistics data on firms in three specific industries: beverages; garments and made-up textiles; rubber and rubber products. (Chapter 3 of the full research report describes the data in detail.)

The evidence is that most manufacturers in Kenya do not plan to use their capital equipment for the number of hours per week that they think it is possible to use it. (Note: this was defined as the maximum possible on a long-term basis doing all necessary preventive maintenance.) This could, of course, be merely a case of irrationality and inefficiency. However, there is good evidence that much of it is a rational response to economic factors over which Government policy can have considerable influence.

#### HOW PLANNED UTILISATION RATES ARE DETERMINED

A priori analysis and early interviews suggested several hypotheses which might explain why entrepreneurs would choose to buy capital and use it for fewer than the maximum number of hours possible. In chapter 2 of the research report, these hypotheses are worked up in the form of mathematical models. In that form, the assumptions can be made very precise and their implications for firm behaviour spelled out in detail and then checked against the data. Of course, it is not assumed that firms are actually able to make such exact detailed calculations, but merely that their behaviour will be a rough approximation of the optimal result, as they work towards it by trial and error.

Here, we will merely summarise the main features of the models. There are two important factors: the shift differential factor; and the increasing returns factor combined with market demand limitations.

#### Shift Differential

The basic assumption is that there are extra costs associated with hiring labour to work at night. Thus the savings created by using the capital more hours per day must be balanced off against the higher cost of labour on the night shift. The implications of this are examined when the firm is producing under constant returns to scale, and either: 1) there is only one technique in production, so that a given amount of output always requires given amounts of capital and labour inputs; or 2) there is a wide choice of techniques available before the machines are bought but once the factory is built and the machinery is in place, there is no possibility of substituting labour for capital. Since in most firms the production process is actually composed of a number of individual operations, the output of one being the input to the next, the firm may have the option of running some operations for more hours than others. Therefore the analysis is carried on at the production process level.

The general conclusion is that if firms are trying to minimise the cost of producing any particular output, the utilisation rate may be less than the maximum and will depend on the relative prices of labour and capital, the nature and size of the differential shift costs and the capital-intensity of the production process.

#### Increasing Returns to Scale

Since there is widespread preoccupation in development economics with the significance of scale economies and the 'size of the market' in less developed countries, the assumption of constant returns to scale is a serious limitation. Therefore, three possible sources of increasing returns (in the sense of decreasing cost per unit of output as scale of output increases) are considered.

A. There may be increasing returns to the enterprise but not within the individual production processes.

The simplest is the case where there are fixed costs which must be incurred regardless of the size of output, e.g., information costs, licensing costs, certain site development costs. More plausibly, there may be costs that are a function of output per time period, although invariant to whether the output is produced on a one or two-shift basis. These costs may be subject to increasing returns. For example, there may be scale economies in information-gathering, marketing, distribution, personnel administration, accounting. There may be scale economies in certain plant construction expenditures: for example, the amount of storage space needed may be a function of output per week and it may not cost proportionally more to build a larger warehouse. Costs of either type have no effect on the conditions determining the utilisation rate, although they obviously affect the choice of the profit-maximising output. Obviously, to the extent that capital expenditure is required for these purposes, the extent of capital savings to be expected from increased utilisation rates is lowered.

B. There may be increasing returns at the production process level caused by indivisibilities,

We assume in the shift differential model that capital and labour are perfectly divisible. In reality, machines may come in sizes. There are constant returns to scale as one goes up through the sizes, but the smallest size available produces more output at full utilisation than the firm wishes to produce, i.e. there is a 'minimum size of plant'.

In the minimum size of plant models it turns out that it is not so much the technology that yields the low utilisation rate but the decision of the determination of output. If the firm maximises profits and if it can sell as much as it wants to at the going price, and if there is no shift differential, then it will always choose to produce an output which implies the highest possible utilisation rate. Therefore, this kind of excess capacity must be caused by some kind of market constraint. The usual situation in Kenya is that the plant is set up to 'serve the Kenya (or East Africa) market' but the market is 'too small'. Obviously, such a plant would never be set up without some kind of protection (either by tariffs or transport costs) because it would be undersold by imports or would be competitive on the world market and could and would export. (Of course, this is an over-simplification in that it ignores the substantial costs of entry into the export market; we will return to this point later on.)

C. Finally, there may be increasing returns at the production process level as one goes up the machine sizes.

This model gives the result that a utilisation rate of less than the maximum may be optimal, even when there are no differential shift costs. The utilisation rate does not depend upon the level of output, but, if the firm could sell all it wanted at the going price, there would be an incentive to expand since average cost is decreasing with output. Presumably, the increasing returns could not hold indefinitely. At some output level, perhaps a very large one, constant or decreasing returns would set in. The production function hypothesised is an approximation to the situation which might hold within a range of outputs.

As in the minimum size of plant case, with no tariffs or transport costs such an industry would probably not be set up in Kenya, unless it could produce on a large enough scale to compete internationally. This presumably would mean beyond the point where there were significant increasing returns. Of course, there are tariffs and transport costs and the East African market is quite small, so that it is quite possible that certain Kenya firms are operating in a region of their production functions which can be approximated by these models.

#### CONCLUSIONS FROM EMPIRICAL RESEARCH

##### The Nature of Differential Shift Costs

It was originally expected that a primary extra cost of a second shift would be a union-negotiated percentage of approximately 10 to 50 per cent added on to the basic wage for working on a night shift. Such explicit shift allowances turned out to be quite low or non-existent in most industries in Kenya,



although there were a few exceptions (for example, the Master Printers' Union gets a 15 per cent shift allowance). Nevertheless, there proved to be other very significant extra costs to running night shifts. Those costs emphasised most by the firms are the following.

- 1) Higher absenteeism on the night shift compared to the day shift. This means that the firms sometimes need to have extra workers on the night shift to be available to fill in for absentees.
- 2) Difficulty in getting proper supervision on the night shift. It is possible to get supervisory personnel who will work at night. Quite a few firms do, and the group includes both some of the largest and most prestigious firms in Kenya, like the Kenya Breweries, and some very small Asian family operations. But such skilled personnel are in short supply, and if they prefer to work days, then even if the supervisor on the night shift is not actually paid more than his day counterpart, there may be extra search costs finding and keeping someone for the job. Moreover, since the hiring of managerial and supervisory personnel is much closer to a bilateral bargaining situation than ordinary collective bargaining, the firm is likely to be aware of the influence of the requirement that a manager have night shift responsibilities on the basic salary he must be paid.

It has been argued that 'management scale' is an important factor in very small firms--i.e., that supervisors are indivisible and that if the firm tried to buy half as many machines and run two shifts it would have to have two supervisors, because it could not put half a supervisor on each shift. This argument is similar to the 'minimum size of plant' argument, and it does not explain why the firm does not simply expand output until it is producing enough to justify one whole supervisor on each shift. Small firms are more likely than larger ones to be small relative to the market and hence to be able to sell more at the going price than they are producing.

Firms often argue that the work permit system makes it impossible for them to get additional supervisors and therefore to put on additional shifts. The work permit system is undoubtedly an influence, but one must be quite careful in examining how it operates. The basic principle of the system is that a noncitizen cannot be hired for any post unless there is no qualified Kenya citizen available to fill the post. Firms are expected to take affirmative action to Kenyanise their work force, particularly at the middle management level. In theory, this policy should have no effect on the availability of supervisors, since one can

IDS/DP/206

hire a noncitizen if there are no Kenyans available. In practice, since the Kenyanisation Board is (legitimately) dubious about the good faith of the employers, many of whom have a past history of racial bias in their employment practices, it is difficult for the Board to assess the firm's requests for non-citizen personnel. Therefore, there are extensive differences of opinion between the Board and the employers.

There is admittedly a non-price rationing mechanism at work. This does not explain why the firms do not spread the supervisors they do get over three shifts; one must invoke the indivisibility argument again. The argument seems to be that the Kenyanisation Board will let you have 'one of each' (kind of supervisor) but not a second or a third. The transactions between the Board and the firm form a highly political bargaining process; this bias is certainly possible. Nevertheless, it does seem just as possible that the firm could argue that it could produce a higher output at lower average cost and employ more unskilled Kenya citizens if it were allowed additional work permits. More important, notice that the rationing mechanism is not rationing supervisors; it is rationing non-citizen supervisors. Presumably there is some price at which a firm could lure a citizen supervisor away from another firm or train one itself and pay him enough to keep him from getting hired. Expatriates (particularly those from the U.S., Britain and Western Europe who make up a significant fraction of the non-citizen personnel in the category under discussion) are very expensive when passages, home leave, housing and other fringe benefits are taken into account.

3) Drop in productivity. More than half of the manufacturers interviewed felt that productivity definitely dropped on the night shift, particularly on the 'graveyard' shift in the very early morning hours. Sometimes this was considered to be the case under exactly the same conditions of supervision as on the day shift. Everybody, including the supervisors, was sleepy; night workers were more likely to come to work drunk. Workers might have other jobs in the daytime (this may seem unlikely given the high unemployment rates in Kenya; it was said only of workers in certain skill categories which were in short supply). But sometimes the drop in productivity was closely related to item 2 above, the difficulty in getting proper supervision on the night shift. The interviews suggest that Kenya firms sometimes have a choice between accepting a lower level of supervision on the night shift and an attendant fall in productivity, and paying search costs, training costs and/or higher wages to secure the needed supervisory personnel.

4) Breakages, accidents, theft. Many firms maintained that there were more breakages of machinery, more mistakes resulting in damaged output, etc. on the night shift. For example, one firm has had two disastrous fires both started on the night shift. In another firm, in one operation which is carried out on the night shift, productivity as such cannot fall because of the nature of the process, but it is on the night shift that the wrong dye is put in, or too much of a chemical, so that occasionally a whole batch has to be discarded. Theft was also reported to be more of a problem on night shifts, probably relating to the supervision problem to some extent. A manufacturer of small easily concealed consumer goods had his workers checked one night and discovered that 26 out of 27 were carrying stolen goods. It was argued that the presence of high-level management in the daytime, even though the managers had no direct role in factory supervision, had a deterrent effect on theft.

5) Cost of providing transport for night workers. Night public transport was poor or non-existent in the major industrial areas of Kenya at the time of the study. More important, workers were afraid of being attacked and robbed on their way home after dark. In some industries, a requirement of free transport for night shift workers was already written into the union contract.

For simplicity, we have been talking as if there is one jump in costs from the 'day shift' to the 'night shift'. The interviews suggest that there may be three for many firms. There is likely to be an additional drop in productivity in going from the second to the third shift. Then, to go beyond three 45-hour shifts per week entails working on Saturday night and Sunday. This requires the firm to pay overtime rates at double time or to secure union agreement to have some workers work Sundays as part of normal working hours, getting their time off at some other time in the week. The unions have not been cooperative in giving this agreement, so practically speaking, most firms face a 100 per cent addition to the base wage in going beyond three shift operation.

#### The Nature of the Technology

The following generalisations can be made, based on the author's observations and the research of Howard Pack on capital-labour substitution and the technology of Kenya manufacturing firms. The degree of potential substitutability between capital and labour *ex ante* varies from industry to industry and process to process, but the assumption of fixed coefficients *ex post* is generally valid, especially as it relates to changes between night and day shifts, when production is looked at in terms of individual processes. The number of people in the factory is often considerably smaller on the night shift even within individual sections of the factory but it is generally because certain minor tasks are performed only on the day shifts, e.g. sweeping up, shifting of raw materials.

IDS/DP/206

from one location to another, etc.; the number of workers operating a particular piece of equipment is almost never variable.

The minimum size of plant factor is very important. In the sixties, considerable investment in manufacturing took place behind the tariff barriers of the East African Community. The East African market is small, and in the last few years there have been increasing problems in trade within the Community, because Uganda and Tanzania have felt that Kenya has been receiving the lion's share of the benefits of the Community. By 1971, transfer taxes, quantitative restrictions and payment delays were hampering Kenyan exports to partner states. In a number of cases, businessmen had seen the writing on the wall ahead of time and already had minimum-sized plants in each of the three East African countries, each operating at less than full utilisation.

In the new Kenya tire factory, there is a machine which represents a large fraction of total capital cost which is used for only a few hours a week. A ceramics factory would be producing enough to supply the entire continent of Africa if it were working the maximum possible hours. Many more examples could be cited.

#### Validity of Predictions of Models

As already reported, the managers said that there were significant night shift costs of the types described above. On a qualitative basis, the interviews suggest that the firms are quite sensitive to these costs. The models predict that for given shift costs, more capital-intensive operations will be operated for longer hours than less capital-intensive operations. We found that firms in relatively labour-intensive industries such as furniture making, radio assembly and clothing manufacture generally planned to work only one shift, whereas in capital-intensive industries such as flour milling, firms planned to run several shifts.

The extent to which firms optimised at the process level was interesting. It was the rule rather than the exception for firms to run expensive machinery on a two or three-shift basis, while running labour-intensive operations like packing on a one-shift basis.

It was encouraging, although not conclusive, that firms frequently explained their behaviour with respect to shifts in terms of whether or not it was 'worth it' to run a night shift, weighing the extra costs involved against the

IDS/DP/206

savings on machinery. Sometimes they argued forcefully that shift costs had no impact on their decision, but this may only have meant that they were so clearly within the range of one or three-shift operation that the decision was probably virtually automatic. For example, one clothing manufacturer argued that 'cost had nothing to do with it'. He would not consider running more shifts under any circumstances because he liked a quiet life and wanted time to be with his family and would not want to have to worry about what was happening on the night shift, etc. But when asked what he would do if sewing machines cost ten times as much, he said, of course, that would be quite a different situation, and then he would have to run shifts. The statistical tests are consistent with these qualitative conclusions. (Results can be found in chapter 3.)

#### POLICY CONCLUSIONS

When there are differential shift costs, if firms are forced to run extra shifts their average cost will actually go up. To the extent that the shift costs are real, then the firms are behaving rationally and should not be forced to increase hours. However, their perception of the costs may be inaccurate. They may believe that productivity falls, breakages and supervision difficulties would be worse than they actually would be. We found surprising uniformity in planned hours among firms producing similar products (although actual hours varied a great deal), but occasionally a manager would predict huge drops in productivity, insuperable supervision problems and the like if he ran a night shift when another firm in the same industry was running night shifts with no difficulties at all. Thus, there might be value in publicising firms which run more than one shift and in asking for figures to justify a decision to run less than three shifts when evaluating investment projects, to make sure that the possibility of shift work has been carefully considered. This will be particularly important in non-competitive industries.

Shift costs can also be acted upon directly by Government policy. Night transportation facilities in the major industrial areas should be improved. For example, at the time when this research was done (summer and fall of 1972), there was no night bus service in the Nairobi Industrial Area and none was contemplated, as far as we could determine. It ought to be cheaper for Kenya Bus Services to provide transport than for individual firms to provide it, since one single medium-sized firm may find that its workers live in widely scattered places. (This would lead to more efficient use of buses also.) Government should do what it can to resist trade union attempts to increase shift allowances. The fact that shift allowances are not common at the present time should not lull

anyone into a false sense of security. Several firms reported that they expected the question of a shift allowance to come up soon in their negotiations with the unions. Pressure should also be exerted on the unions to make Sunday working possible at normal pay rates. It may well be very desirable that workers should have a full day of rest per week, but it is not clear why this has to be Sunday.

The main policy significance of the shift differential models is the importance of the factor-price ratio. Even where technology seems to be most rigid--in the case of the ex ante fixed coefficients production function where the hourly flow capital/labour ratio is fixed--there is a dimension for varying the ratios of capital stock to labour and output through the utilisation rate.

In Kenya, as in many less developed countries, the problem is not so much of one of adding good policies as of eliminating bad policies. For example, Kenya imports nearly all of her manufacturing machinery and a small country faces a very elastic supply curve for such good. An over-valued exchange rate is defined by high tariffs on consumption goods, with no tariffs on capital goods. As a result of these policies the cost of capital is lowered via P, the purchase price. Another price-distorting policy is the investment incentive. Firms are allowed an investment deduction of 20 per cent on new buildings and machinery in the year of investment, which lowers the cost of capital through the resultant tax saving.

It is generally agreed that in Kenya the wages of at least some types of labour are higher than the social opportunity cost. There is considerable difference of opinion as to why this is so and what if anything can be done about the level of wages in the manufacturing sector which we will not discuss here. But to the extent that wages can be kept down, efficient capital utilisation will be encouraged. It would not be a good idea to affect utilisation rates by direct controls, since the information and enforcement costs of these would probably make them unworkable.

A very common explanation given for operating at low utilisation rates was inadequate market demand for their output. When asked why they had purchased the excess capital equipment, sometimes they replied that their demand forecasts had proved to be wrong. The trade problems within the East African Community were the usual cause of this. But the other important reason given was the 'minimum size of plant' argument. It was not possible to examine the technology available to each firm in detail to decide whether this was really true. It was originally hoped that data could be collected on how many hours the firm actually expected to be operating the equipment in 1971, when it made the investment decision (as opposed to the maximum number it would operate before buying additional equipment).



When there is a minimum size of plant, it is not the technology that is the problem but the determination of output. If output is less than the full utilisation output, the firm is operating on the downward sloping part of its average cost curve and can increase profits by increasing output. Thus we hoped to be able to see if differences between planned hours (in the sense of chapter 3) and expected hours (in the sense above) were correlated with various measures of market conditions.

However, it proved difficult to distinguish between excess capacity that was expected and the excess capacity that actually occurred. Firms have a tendency to buy the minimum size of plant with the hazy idea that they will be using it to capacity 'pretty soon'. Each year they revise their opinion of how soon, and the expectations on which the purchase of the equipment was based are lost in the past. Usually the firms' demand forecasts had proved to be too optimistic and they were operating fewer hours than they had expected, but not always. In one interesting case, a firm owned a very expensive machine which they used only two hours a week. The manager said he would use the machine for 166 hours a week (the maximum potential hours) before buying another one, if he could sell the output. Yet, when the machine was purchased in the mid-sixties, it was expected that by 1971 the firm would be using it only two hours every other week--and selling output at a much higher price. Since then, several other firms had entered the market, and competed the price down.

To the extent that the minimum size of plant factor is a feature of technology, then, given the small size of the Kenya market, for many products the alternatives are to import the product, to put up with anticipated excess capacity or to export on the world market. Since Kenya is a small country, in many commodities if it could meet the going world price and solve the initial entry problems, it could sell as much as it wanted.

Government should pursue policies which lead to an economic environment in which there are not incentives to set up firms operating at less than full utilisation and there are incentives to export. Kenya trade policies have tended to encourage firms to stay in the protected home market and to discourage them from exporting. A general rationalisation of trade policy, perhaps along the lines suggested by John Power of a uniform tariff, uniform domestic value added tax and direct subsidies where needed, would have a profound effect in the long run on excess capacity. At the very least, a significant export subsidy would help to correct some of the bias against exports.

It is frequently argued that the need to avoid excess capacity is precisely the reason why protective tariffs are necessary. If operating at capacity, the argument runs, the firm would be competitive with imports. To operate

IDS/DP/206

at capacity the firm would have to have the whole Kenya market. Because of brand loyalty or the snob appeal of imports, or what have you, the firm cannot get the whole domestic market, unless imports are restricted either by a ban on imports or tariff protection. Thus the tariff will enable a viable domestic industry to be established and will prevent excess capacity. In the interviews, we came across some fascinating examples of the (quite predictable) perverse results such a policy can have.

Consider, for example, this case from an industry producing an intermediate good. The industry has an effective rate of protection of approximately 50 per cent in the Phelps-Wasow study. In one particular line, an old established firm had been supplying the product for years. Then a new firm was established; the old firm immediately dropped its price by nearly 50 per cent. Two years of fierce competition ensued, with both firms losing money. Eventually, of course, they got together and set a price that makes them both happy. And both are operating at less than capacity. The same firm is about to start making a product that has always been supplied by a very large firm. The latter threatened to 'kill' the small firm, but it is going in anyway, and expects that the two firms will eventually reach a compromise and set price or quotas. At the same time, firms frequently mention the high cost of this product in discussing their problems in competing on the export market.

The paint industry is another such case. Paint has an effective rate of protection of 95.1 per cent. For some years there have been five firms in the paint industry, all operating below capacity. These firms belong to the Paint Manufacturers Association, which sets the price of paint and the conditions under which it is sold (e.g., maximum discounts). Recently two new paint factories have been set up; these do not belong to the Association and have been setting very low prices, and out-competing the other firms on government tenders. In the short run, some people are getting cheaper paint--in the long run, what will happen? Probably, these two firms will join the Association; a new price will be set, and it will have to be higher, so that firms can continue to get their normal return while each firm has more excess capacity.

The profits in this industry will not be particularly high. Some of course will be siphoned off into the excess capacity. In addition, when the firms agree not to compete on price, they start competing in other ways-- product differentiation via customer services, advertising (Who sponsors expensive tv programmes? --paint firms), so that one firm said that selling and marketing costs were considerably higher than 'works cost' (the manufacturing costs in the factory). It may be, as this firm argued, that the customers are willing to pay extra for all this service. If so, the industry does not need its high tariff.



Should new entry be forbidden? Then what is to prevent the existing firms from making monopoly profits? The practical difficulties of price controls and profit ceilings are immense. In Kenya, the firms are particularly likely to take their monopoly profits in inefficiency. On the other hand, if a new entry is allowed excess capacity results rather than lower prices in the long run. The fact that this new entry takes place suggests that there is entrepreneurial talent and investment capital ready to respond to incentives. What a pity the incentives are the wrong ones.

Firms must be able to meet world prices if they are to export; thus changes in tariff and exchange rate policies and/or export subsidies are of major importance. Nevertheless, the effect of such changes will be considerably strengthened if they are combined with serious export promotion efforts. The cost of entry for an individual firm into the world market may be large. Significant economies in these costs might be achieved through an adequately funded export promotion body with experienced professional staff. The present Export Promotion Council is under-staffed and under-financed.

Some areas of particular importance for action are:

1) Export insurance. Exporters in developed countries can get export insurance to places like Nigeria, so they do not have to bear the risks of non-payment. Kenya exporters cannot. Since the risk of non-payment, etc. is great in shipping to countries in Africa and since these countries are natural markets for Kenya products, a workable insurance system would probably have a significant impact. Firms reported that they would require a larger profit margin on export deals to allow for the fact that some deals would go sour--yet to compete on price with the current over-valued exchange rate, they would usually have to sell at a lower price than the domestic price.

The rates for such insurance need not be especially high. In Europe, the insurance firm tends to set a reasonable rate or to refuse to insure at all. The deals are less risky to the insurance firm than to the individual exporter because the insurance firm can investigate the credit rating of the buyer; moreover, the buyer is more careful to avoid non-payment because of the risk that the insurance companies will refuse to insure his order and he will then be unable to get imports on credit in the future.

2) Information about markets. The Export Promotion Council has made efforts in this area, but they are not sufficient. One firm questioned the priorities reflected in sending a twelve-man mission to tiny Mauritius, but doing nothing at all about Nigeria, which has 40 million people.

3) Foreign exchange for marketing trips. Exporting firms reported that they had great difficulty getting foreign exchange for such trips, yet to develop an export business they needed to visit potential markets, especially given the lack of information in Kenya. Obviously, the Central Bank is worried about loss of foreign exchange because such trips are used as a cloak for pleasure trips. Yet this seems to us to be a very short-sighted policy. As long as the permission for such trips is very closely tied to results--you get one or two trips 'on spec', but after that you have to be able to show that you have actually exported significant amounts and that your trips are producing orders--then it should be relatively easy to get approval. So what if some businessmen spend time enjoying the sights as well as getting orders, as long as they get the orders. It may well be, with the present exchange control policies, that the prospect of being able to take a trip to Europe would be a stronger incentive to the manager of a medium-size firm to export than a straight financial incentive.

4) General administrative delays. Because the world market is so much more competitive than the domestic market, exporters must be able to supply the goods on time and at the right price. But Government red tape, particularly that associated with trade policy, may make this very difficult. For example, one garment manufacturer applied for an import license for cloth for a trial export order to Europe. Although he applied in plenty of time to get the license, and there was no question of it being refused, there was such a long delay that he was unable to get the cloth in time. He had to buy the material from local traders at a higher price because he did not dare jeopardise future business by failing to meet his commitment; he lost a significant amount on the transaction.

The significant factors affecting actual utilisation rates and common to a number of industries are the trade problems in the East African Community (which have already been mentioned) and delays and red tape in the administration of Government policies, particularly trade policies. In considering the impact of Government policies, economists frequently ignore the problems of administering them effectively as of second order importance. This is a mistake in Kenya, where the shortage of skilled manpower makes it inevitable that the administration of complex regulations should present serious difficulties.

We collected many anecdotes about these difficulties. A representative selection of them is presented below. They suggest the large gains that could be achieved by simplifying the rules--both by enabling firms to plan more efficiently and by releasing Government manpower for other tasks.

IDS/DE/206

Examples of Administrative Difficulties: Many firms reported difficulties with import licensing. The 1972 increase in the number of items that were absolutely banned complicated things immensely. There are thousands of commodities entering into international trade and government staff cannot possibly be familiar with every single one. Thus there were frequently long delays in granting import licenses, and the flow of raw materials was interrupted. One firm had to close down its factory for a time during the summer of 1972 because it had been issued a license to import the wrong material. Another firm, which exports 95 per cent of its output feared that it might have to close part of its plant because the special dye needed (not manufactured in Kenya) was classified as paint and therefore the firm had not been able to get a license. The dye was sitting in the port costing rent.

Another firm produces cattle dip. One of the inputs is technically called a detergent. Detergents were banned imports, but this is a special type which was not produced in Kenya. After much red tape, the firm was given a quota which was significantly less than it needed, as well as much delayed, so there was a real possibility of the firm running out of the item. At the same time, Government was spending time and money persuading people to dip their cattle!

Time and again, we were told that a product was banned because someone had said he was going to produce it. Then he did not get started, and meanwhile no one could import it, so production was held up in other firms. The red tape involved in convincing Government that the item was not being produced was incredible. For example, a firm has large foot-pedal type stapling machines for stapling cardboard boxes. It was refused permission to import staples on the grounds that they were produced in Kenya. It corresponded with the staple firm and established that the firm could not make this particular type. (The staple firm implied that the firm should buy new stapling machines.) Armed with a letter to this effect, the firm submitted indents requesting permission to import. The indents were returned because the SITC number was not shown. The number was added, neatly, in ink; the indents were again returned, with a note to the effect that the number had to be typed. An entire new set of indents was submitted. This time they were returned because the paper was too short. The indents were finally submitted on longer paper and at this point the order had already been delayed three months.

There were restrictions on buttons and zips because firms in the Industrial Estate were making these items. But they made only a few types. In quality garment making, e.g. ladies' dresses, variety in trimming is essential if the products are to compete with imports and be exported.

IDS/DP/206

Import licenses were only good for four months; if the goods did not arrive in time, and this frequently happened, the license had to be renewed. There could be lengthy delays in renewal. All this delay and uncertainty surrounding the import of raw materials not only makes it difficult to plan production, it also makes it necessary for firms to hold larger input stocks and thus increases working capital requirements.

When there are large fluctuations in demand, extra capacity must be kept on hand for peak periods, and over-time must be paid. Thus firms which sell to Government would like to see orders placed in good time so that production can be planned ahead. For example, the Jute Control Board failed to place orders for gunny bags between April and July of 1971, and then placed very large orders. The company that produces the bags worked below capacity for part of the year and then had to do substantial over-time for the rest of the year. For historical reasons, this firm is subject to very high over-time rates (twice the basic rate on week-days and two-and-a-half times on Sundays and holidays, compared to one-and-a-half and two times for other firms), so costs were raised considerably. (Reported in East African Standard, August 31, 1972.) The printing industry is subject to large fluctuations in demand. If Government would get together with the book publishers' association and decide earlier on its orders for educational books so that more notice could be given to the printers, they could spread the work better.

We heard many complaints about the administration of work permits. A shortage of skilled and supervisory personnel was often said to be a major factor causing under-utilisation of capital and low productivity. The problem may be exaggerated since nearly all the managers of manufacturing firms are non-Africans, and in any case the Kenya Government has decided that the long-run benefits of Kenyanisation are worth the short-run costs. Nevertheless, the more efficient the administration of Kenyanisation policies, the lower the cost is likely to be.

For example, a firm has foundry equipment which is not in use because the expert foundryman they planned to employ was not available after all. There is no citizen available for the work, and they have tried to recruit someone in Europe. The Kenyanisation of personnel people do not query their need for an expatriate, but the delay between finding the person and getting his work permit is so long that candidates are not willing to hold themselves available. The manager wants to know why he cannot be given a work permit for a person of specified qualifications and sign the man on the spot.

Finally, we came across several cases where firms were promised protection and bought machinery on that basis. Then they did not get protection and were left with excess capacity. We have no sympathy for their failure to get protection, but clearly it would have been better not to promise the protection in the first place and thus avoid the excess capacity.

#### Garments and Made-Up Textiles

In garments and made-up textiles, there is a nice contrast between garment garments and canvas products (e.g. tents) on the one hand, and blankets on the other. In the first, there is no indivisibility in the technology and capital costs are small relative to labour costs. Firms generally plan to run one shift now and in the future. In general, firms do not face a market constraint although one large shirt manufacturer reported excess capacity because the factory had been set up to serve the East African Community and the expected demand had not materialised.

The firms have difficulty exporting because the price is high and therefore it is difficult to compete in lines like safari suits where there is a special promotion aspect. Since there are high duties on inputs, the duty drawback makes a lot of difference to this industry, but there is the usual red tape and the firms do not get back the full amount of the duty they pay. In making men's shirts, 20 per cent of the cloth is wasted in cutting; this amount is deducted before the drawback is calculated. A firm making quality garments for export uses high quality fabrics and pays duty at 45 per cent; the duty is refunded at the lower rate of shs 3 per metre. It does not get a drawback on trimmings. An export subsidy would probably make a significant difference to this industry.

The manufacture of blankets is a more capital-intensive operation and the factories are designed to operate on a three-shift basis. However, there is excess capacity in the industry because of serious market problems. Although blankets were subject to industrial licensing, too many factories were set up. The product is too high cost for its low quality to compete on the export market, even with a subsidy.

#### Rubber and Rubber Products

The industry divides into two main parts: tyres and consumer goods such as rubber footwear. Both are capital-intensive and nearly all firms reported that they would work their machinery on a three-shift basis if demand were adequate.

The footwear side of the industry has been hit hard by the restrictions on trade with the rest of East Africa. Export subsidies and export promotion would help to improve utilisation.

The situation in the tyre market illustrates perfectly the perverse effects of import substitution through protection. The manufacture of new tyres is highly capital-intensive; economies of scale and minimum size of plant considerations are very important. As of 1972 the new Firestone factory was producing 600 tyres a day, compared to factories in Europe which produce 40,000 tyres a day. Although the factory had been running on a three-shift basis from the start, some of the most expensive machines ran many fewer hours a week. Needless to say, the tyres produced are expensive and must be protected; at the present the import of new tyres is restricted.

There is a well established retreading industry in Kenya. The high price of new tyres will stimulate the demand for retreads, but to make retreads one needs used tyres. Thus the production of retreads depends on the supply of new tyres in the country and the import of used tyre casings. There is a surplus of used casings in the world market, since the structure of tyre demand in developed countries favours new tyres. The import of casings was discouraged in the past by the fact that the duty on tyres, whether new or old, was paid by weight, so that it was much higher in percentage terms on used casings. In 1972, the import of casings was restricted in an attempt to restrict the supply of retreads and thus protect Firestone's market. Retreading firms saw rough days ahead.

Not only has a new factory operating at much less than capacity been set up behind a wall of protection to produce an essential product at a high price. Excess capacity is also being created in an existing industry producing a lower-priced substitute. The most chilling fact about all this is that there are going to be a lot more bald tyres on the roads, particularly on the wheels of passenger taxis. Protectionist import substitution policies are going to cost lives as well as money.



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